SECONDARY CARBONATE FORMS IN THE BASAHARC DOUBLE PALEOSOIL (BASAHARC, HUNGARY)

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Pedogenic (or secondary) carbonate as indicator of pedogenesis and paleoenvironment was examined in a Pleistocene paleosoil complex. The studied Basaharc Double (BD) paleosoil, a reference horizon in the Young Loess Series in Hungary, is a forest-steppe-like soil of OIS 7 age. BD paleosoil was sampled at its type locality: the former Basaharc brickyard located in the valley of the Danube at the northern end of the Transdanubian Range (PÉCSI & HAHN, 1987). In the 20 to 25 m thick loess-paleosoil sequence several paleosoil pedocomplexes occur, one of them is the Basaharc Double composed of upper BD1 and lower BD2 soil horizons with intercalating loess.

Various types of pedogenic carbonates (*e.g.* diffuse carbonate, nodules and concretions as "loess dolls") are present, but in this study only forms and distribution of discrete, small scale precipitates were investigated in detail due to their environmental significance. The discrete small scale carbonate (less than a few millimetres in size) appears as

- calcified root cells ("corn-ear"-like aggregates consisting of sparry crystals) in root channels,
- hypocoatings (micritic impregnations of matrix) around root channels,
- bundles of calcite needles in pores and cavities,
- earthworms spheroids (nodules composed of drusy calcite crystals).

These small scale carbonate accumulations are also known from other loess-paleosoil sequences and their formation is related directly or indirectly to biological activity during pedogenesis (BECZE-DEÁK *et al*., 1997).

Earthworm spheroids and hypocoatings distribute uniformly in the sequence, while higher amount of calcified root cells was detected in the paleosoil layers than in the host loess suggesting longer stability of soil surface. Enrichment of needle-fiber calcite is typical for the upper BD1 horizon, but this carbonate form is practically absent in the lower BD2 horizon and in the loess. Calcite needles formed by biomineralization of fungal filaments (VERRECCHIA & VERRECCHIA, 1994) indicate the presence of former fresh organic matter in BD1 decomposed by fungi (BECZE-DEÁK *et al*., 1997). Since needle-fiber calcite is rarely preserved in fossil soils, more investigations are needed to determine whether it was later leached out from the lower paleosoil or it precipitated primarily in a very small amount in BD2.

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